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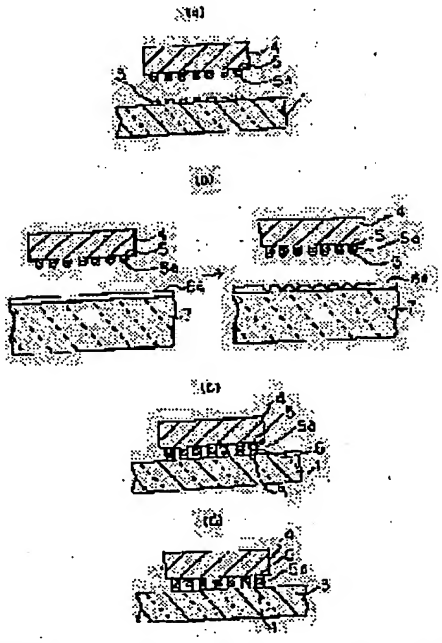
(54) METHOD OF MOUNTING IC DEVICE ON WIRING BOARD

(57)Abstract:
PURPOSE: To provide a method of mounting an IC device on a wiring board, where the electrodes of the IC device can be firmly bonded to the wiring conductor of the wiring board in a short time through the intermediary of solder.
CONSTITUTION: An IC device 4 is mounted on a wiring board 1 through the intermediary of solder bumps 5a provided to the electrodes 5 of the IC device 4, where flux 6 is applied onto the surfaces of the solder bumps 5a. The IC device 4 is placed on the wiring board 1 in such a way that the solder bumps 5a are in contact with the wiring conductor 3 of the wiring board 1, and the solder bumps 5a of the IC device 4 and the flux 6 attached to the solder bumps 5a and heated simultaneously to bond the electrodes 5 of the IC device 4 to the surface of the wiring conductor 3.



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CLAIMS

[Claim(s)]
[Claim 1] It is the mounting approach of IC component to the wiring substrate which mounts IC component through the solder bump who has attached in the electrode of this IC component on a wiring substrate. It lays, as a conductor is contacted. flux is adhered to the solder bump front face of said IC component — making — a degree — said IC component — a wiring substrate top — a solder bump — wiring of a wiring substrate — the flux to which the solder bump and this solder bump of said IC component were made to adhere after that — coincidence — heating — wiring — a conductor — the mounting approach of IC component to the wiring substrate characterized by joining the electrode of IC component to a front face through solder.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to amelioration of the approach of mounting IC component on a wiring substrate with a flip chip method at a detail, more about the mounting approach of IC component to a wiring substrate.
[0002]
[Description of the Prior Art] conventionally, generally mounting of IC component to a wiring substrate, for example, mounting to the wiring substrate of IC component which adopted the flip chip method, is shown in drawing 3 (a) and (b) — as — (1) — wiring of plurality [top face] first — the wiring substrate 11 made from alumina ceramics on which the conductor 13 was made to put, and the IC component 14 in which the electrode 15 was made to attach solder bump 15a are prepared.
[0003] (2) As shown in drawing 3 (a) below, apply flux 16 to the field A to which the IC component 14 of wiring substrate 11 top face is mounted by stamp printing.
[0004] in addition — if said flux 16 changes from the liquid which has the hyperviscosity which carried

out addition mixing of the organic solvents, such as butyl alcohol and IPA (isopropyl alcohol), to turpentine and it is heated by predetermined temperature — wiring — a conductor — 13 front face — returning — wiring — a conductor — while removing the oxide film currently formed in 13 front face — wiring — it succeeds in the operation which joins solder to a conductor 13 firmly.

[0005] moreover, applying said flux 16 all over field [of the wiring substrate 11] A — wiring — the line breadth of a conductor 13 — very — thin — wiring — it is difficult only for the front face of a conductor 13 to carry out printing spreading, and workability is because it is bad.

[0006] (3) and it is shown in drawing 3 (b) below — as — the field A of wiring substrate 11 top face — the IC component 14 — solder bump 15a of this IC component 14 — each wiring — it is contacted by the conductor 13, and make and lay.

[0007] (4) the furnace for every IC component 14 degrees C [about 230 degrees C] solder reflow which finally laid said wiring substrate 11 in the top face — putting in — flux 16 — wiring — a conductor — while removing the oxide film of 13 front face — this wiring — the electrode 15 of the IC component 14 is joined to a conductor 13 through solder, and mounting to the wiring substrate 11 of the IC component 14 is completed by this.

[0008]

[Problem(s) to be Solved by the Invention] However, since it adheres to flux 16 so much all over field [of the wiring substrate 11] A according to the mounting approach of IC component to this conventional wiring substrate, Flux 16 and solder bump 15a attached in the electrode 15 of the IC component 14 are heated at the furnace for solder reflow. If bumping tends to happen to the organic substance contained in flux 16 and bumping happens to the organic substance contained in this flux 16 in case the IC component 14 is mounted in the wiring substrate 11 the electrode 15 of the IC component 14, and wiring — between conductors 13 — a location gap — generating — consequently, the electrode 15 of the IC component 14 — predetermined wiring — it has the fault of the ability not to make it join to a conductor 13 certainly and firmly through the solder bump 15.

[0009] Moreover, since the top face of the wiring substrate 11 adhered to flux 16 so much, when the IC component 14 was mounted in the wiring substrate 11, long duration was taken to evaporate the organic substance contained in said flux 16, and it also had the fault from which mounting of a up to [the wiring substrate 11 of the IC component 14] becomes what has very bad effectiveness.

[0010]

[Objects of the Invention] this invention is thought out in view of the above-mentioned fault — having — the purpose — the electrode of IC component — a short time — wiring of a wiring substrate — it is in offering the mounting approach of IC component to the wiring substrate which made it possible to make it join to a conductor certainly and firmly through solder.

[0011]

[Means for Solving the Problem] The mounting approach of IC component to the wiring substrate of this invention Flux is made to adhere to the solder bump front face attached in the electrode of IC component. It lays, as a conductor is contacted. next, said IC component — a wiring substrate top — a solder bump — wiring of a wiring substrate — the flux to which the solder bump and this solder bump of said IC component were made to adhere after that — coincidence — heating — wiring — a conductor — it is characterized by joining the electrode of IC component to a front face through solder.

[0012]

[Example] It explains taking the case of the thermal head which is made to carry out joule generation of heat of the heater element for the mounting approach of this invention alternatively by the drive of IC component, and forms a predetermined printing image in a thermal paper etc. hereafter.

[0013] one example of the thermal head which manufactured drawing 1 with the application of the mounting approach of this invention — being shown — 1 — a wiring substrate and 2 — a heater element and 3 — wiring — a conductor and 4 are IC components.

[0014] Said wiring substrate 1 succeeds in the operation which controls the temperature of a thermal

head to temperature required to form a good printing image in a thermal paper etc. while it consists of electrical insulation materials, such as alumina ceramics, and supports a heater element 2 and the IC component 4 grade for a drive on the top face.

[0015] moreover, many heater elements 2 carry out a covering array by 16 dot(s)/mm on the top face of said wiring substrate 1 at high density — having — **** — further — each heater element 2 — wiring of a pair — the conductor 3 is connected.

[0016] since said heater element 2 consists of tantalum nitride etc. and itself has predetermined electrical resistivity — wiring of a pair — if power is impressed through a conductor 3, joule generation of heat will be generated heat in a lifting and the temperature required to form a printing image of 250–400 degrees C, for example, temperature.

[0017] moreover, wiring of a pair connected to said heater element 2 — a conductor 3 — from metals, such as aluminum, — changing — wiring of this pair — a conductor 3 succeeds in the operation which impresses predetermined power required in order to make a heater element 2 produce joule generation of heat.

[0018] in addition, wiring of said heater element 2 and a pair — a conductor 3 is put on a predetermined pattern on the wiring substrate 1 by adopting the well–known sputtering method and a well–known photolithography technique conventionally.

[0019] moreover, said wiring — the electrode 5 of the IC component 4 is joined to the conductor 3 through the solder bump, a heater element 2 is made to correspond to an external electrical signal, joule generation of heat is carried out alternatively, and this IC component 4 succeeds in the operation which makes the printing image for which it asks to a thermal paper etc. form.

[0020] the thermal head mentioned above in this way — the drive of the IC component 4 — following — wiring of a pair — impress predetermined power between conductors 3, while making a heater element 2 correspond to an external electrical signal and making predetermined temperature carry out joule generation of heat, a thermal paper etc. is made to conduct the heat which this generated heat, and it functions as a thermal head by forming a printing image in a thermal paper etc.

[0021] Next, how to mount the IC component 4 on said wiring substrate 1 is explained using drawing 2 (a) – (d).

[0022] (1) it is first shown in drawing 2 (a) — as — a top face — a heater element 2 and wiring — prepare the wiring substrate 1 made from alumina ceramics on which the conductor 3 was made to put, and the IC component 4 in which the electrode 5 was made to attach solder bump 5a.

[0023] (2) Next, make flux 6 adhere to the solder bump 5a front face of the IC component 4.

[0024] As shown in drawing 2 (b), said flux 6 forms flux layer 6a of fixed thickness on the flux imprint plate 7, and the solder bump 5a front face of the IC component 4 adheres to it by contacting the solder bump 5 of the IC component 4 to this flux layer 6a.

[0025] in addition — if said flux 6 is heated by predetermined temperature in the furnace for solder reflow which is the liquid which has in turpentine the hyperviscosity which carried out addition mixing of the organic solvents, such as butyl alcohol and IPA, and is mentioned later — wiring — a conductor — three front face — returning — wiring — a conductor — it succeeds in the operation which removes the oxide film currently formed in three front face.

[0026] (3) next, said IC component 4 — the wiring substrate 1 top — solder bump 5a of this IC component 4 — wiring of the wiring substrate 1 — it is contacted by the conductor 3, and make and lay.

[0027] by using a die bonder etc., said IC component 4 is laid in the predetermined location of wiring substrate 1 top face, and shows flux 6 to drawing 2 (c) at this time — as — each wiring from solder bump 5a — it imprints according to the individual of a conductor 3.

[0028] (4) Finally put the wiring substrate 1 in which the IC component 4 was made to lay into the furnace about 200 thru/or for 230–degree C solder reflow. solder bump 5a of the IC component 4, and flux 6 — coincidence — heating — flux 6 — wiring — a conductor, while returning three front face and removing an oxide film this wiring — a conductor — as the electrode 5 of the IC component 4 is shown

in three front face at drawing 2 (d), it is made to join through solder bump 5a, and mounting of a up to [the wiring substrate 1 of the IC component 4] is completed by this.
[0029] in this case, the flux 6 — each wiring from solder bump 5a of the IC component 4, since a conductor 3 imprints according to an individual and it only adheres to a small amount of flux 6 on the wiring substrate 1 Flux 6 and solder bump 5a attached in the electrode 5 of the IC component 4 are heated at the furnace for solder reflow. Most things for which the organic substance contained in flux 6 causes bumping in case the IC component 4 is mounted on the wiring substrate 1 cannot be found. consequently, the electrode 5 of the IC component 4 and wiring — being exact in alignment with a conductor 3 — carrying out — the electrode 5 of the IC component 4 — predetermined wiring — it can be made to join to a conductor 3 certainly and firmly through solder bump 5a now
[0030] Moreover, since the flux 6 to which it adheres on said wiring substrate 1 has few the amounts, in case it mounts the IC component 4 on the wiring substrate 1, the organic substance contained in flux 6 evaporates for a short time, and mounting of a up to [the wiring substrate 1 of the IC component 4] can perform it very efficiently.
[0031] In addition, there is no this invention what is limited to the above-mentioned example, and although the above-mentioned example explained mounting of IC component in a thermal head possible as for various modification when it was the range which does not deviate from the summary of this invention, it is applicable also to mounting of IC component in other electronic instruments, such as hybrid integrated circuit equipment.
[0032] Moreover, although adhesion of the flux 6 to the solder bump 5a front face of the IC component 4 was performed by using the flux imprint plate 7 in the above-mentioned example You may make it adhere to the solder bump 5a front face of the IC component 4 by carrying out printing spreading of the flux with screen printing. Or the method of application of the flux which used the metal mask, i.e., the metal mask which drilled two or more holes corresponding to a metal plate with solder bump 5a of the IC component 4, is prepared. Next, the IC component 4 is inserted in solder bump 5a of this IC component 4 by the hole of a metal mask at the 1 principal-plane side of said metal mask, and it is made to make and contact. Then, you may make it adhere by making flux apply to solder bump 5a of the IC component 4 alternatively from the other principal plane side of a metal mask.
[0033]
[Effect of the Invention] From making flux adhere to the solder bump attached in the electrode of IC component according to the mounting approach of IC component to the wiring substrate of this invention It is contacted by the conductor, and makes and lays. IC component — a wiring substrate top — a solder bump — wiring of a wiring substrate — the solder bump and flux of after an appropriate time and IC component — coincidence — heating — flux — wiring of a wiring substrate — a conductor, while returning a front face and removing an oxide film In case the electrode of IC component is joined to a front face through solder, the organic substance contained in flux is little. this wiring — a conductor — causing bumping — almost — there is nothing — consequently, the electrode of IC component and wiring — being exact in alignment with a conductor — carrying out — the electrode of IC component — predetermined wiring — it can be made to join to a conductor certainly and firmly through solder now
[0034] Moreover, according to the mounting approach of IC component to the wiring substrate of this invention, since there are few amounts of flux, in case IC component is mounted on a wiring substrate, the organic solvent contained in flux evaporates for a short time, and mounting to the wiring substrate of IC component can carry out very efficiently.
[0035]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the perspective view showing one example of the thermal head which mounted IC component by the approach of this invention.
[Drawing 2] (a) Or (d) is a sectional view for every process for explaining the mounting approach of IC component to the wiring substrate of this invention.
[Drawing 3] (a) and (b) are the sectional views for every process for explaining the mounting approach of IC component to the conventional wiring substrate.
[Description of Notations]
1 ... Wiring substrate
2 ... Heater element
3 ... wiring — a conductor
4 ... IC component
5 ... Electrode
5a .. Solder bump
6 ... Flux

[Translation done.]

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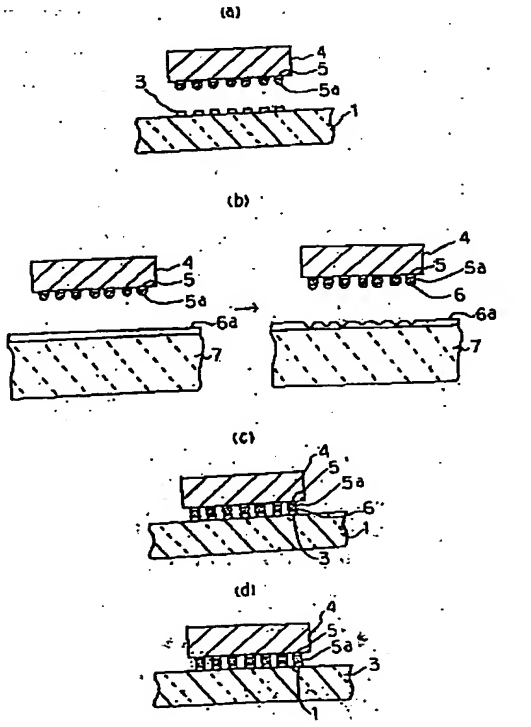
(54)【発明の名称】配線基板へのＩＣ素子の実装方法

(57)【要約】
【目的】ＩＣ素子の電極を短時間で配線基板の配線導体に半田を介し確実かつ強固に接合させることを可能とした配線基板へのＩＣ素子の実装方法を提供する。
【構成】配線基板１上にＩＣ素子４を、該ＩＣ素子４の電極５に取着してある半田バンプ５ａを介して実装する配線基板１へのＩＣ素子４の実装方法であって、前記ＩＣ素子４の半田バンプ５ａ表面にフラックス６を付着させ、次に前記ＩＣ素子４を配線基板１上に半田バンプ５ａが配線基板１の配線導体３に当接するようにして載置し、その後に前記ＩＣ素子４の半田バンプ５ａと該半田バンプ５ａに付着させたフラックス６とを同時に加熱し、配線導体３表面にIC素子４の電極５を半田を介し接合させることを特徴とする



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【特許請求の範囲】

【請求項１】配線基板上にＩＣ素子を、該ＩＣ素子の電極に取着してある半田バンプを介して実装する配線基板へのＩＣ素子の実装方法であって、

前記ＩＣ素子の半田バンプ表面にフラックスを付着させ、次に前記ＩＣ素子を配線基板上に半田バンプが配線基板の配線導体に当接するようにして載置し、その後に前記ＩＣ素子の半田バンプと該半田バンプに付着させたフラックスとを同時に加熱し、配線導体表面にＩＣ素子の電極を半田を介し接合させることを特徴とする配線基板へのＩＣ素子の実装方法。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は配線基板へのＩＣ素子の実装方法に関し、より詳細にはフリップチップ方式によりＩＣ素子を配線基板上に実装する方法の改良に関するものである。

【０００２】

【従来技術】従来、配線基板へのＩＣ素子の実装、例えばフリップチップ方式を採用したＩＣ素子の配線基板への実装は一般に図３（ａ）（ｂ）に示すように、

（１）まず上面に複数個の配線導体１３を被着させたアルミナセラミックス製の配線基板１１と、電極１５に半田バンプ１５ａを取着させたＩＣ素子１４とを準備する。

【０００３】（２）次に図３（ａ）に示す如く、配線基板１１上面のＩＣ素子１４が実装される領域Ａにフラックス１６をスタンプ印刷により塗布する。

【００００４】尚、前記フラックス１６は、松脂にブチルアルコールやＩＰＡ（イソプロピルアルコール）等の有機溶剤を添加混合した高粘度を有する液体から成り、所定の温度に加熱されると配線導体１３表面を還元し、配線導体１３表面に形成されている酸化膜を除去するとともに配線導体１３に半田を強固に接合させる作用を為す。

【０００５】また前記フラックス１６を配線基板１１の領域Ａ全面に塗布するのは、配線導体１３の線幅が極めて細く、配線導体１３の表面のみに印刷塗布するのが困難で作業性が悪いためである。

【０００６】（３）そして次に図３（ｂ）に示す如く、配線基板１１上面の領域ＡにＩＣ素子１４を、該ＩＣ素子１４の半田バンプ１５ａが各配線導体１３に当接されるようにして載置する。

【０００７】（４）最後に前記配線基板１１をその上面に載置したＩＣ素子１４ごと約２３０℃の半田リフロー用の炉に入れ、フラックス１６により配線導体１３表面の酸化膜を除去するとともに該配線導体１３にＩＣ素子１４の電極１５を半田を介して接合させ、これによってＩＣ素子１４の配線基板１１への実装が完了する。

【０００８】

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【発明が解決しようとする課題】しかしながら、この従来の配線基板へのＩＣ素子の実装方法によれば、配線基板１１の領域Ａ全面にフラックス１６が多量に付着されているため、フラックス１６とＩＣ素子１４の電極１５に取着された半田バンプ１５ａとを半田リフロー用の炉で加熱し、ＩＣ素子１４を配線基板１１に実装する際、フラックス１６中に含まれる有機物質等に突沸が起こり易く、該フラックス１６中に含まれる有機物質等に突沸が起こると、ＩＣ素子１４の電極１５と配線導体１３との間に位置ずれが発生し、その結果、ＩＣ素子１４の電極１５を所定の配線導体１３に半田バンプ１５を介して確実かつ強固に接合させることができないという欠点を有している。

【０００９】また配線基板１１の上面にフラックス１６が多量に付着されているため、ＩＣ素子１４を配線基板１１に実装する際、前記フラックス１６中に含まれる有機物質等を蒸発させるのに長時間を要し、ＩＣ素子１４の配線基板１１上への実装が極めて効率の悪いものとなる欠点も有していた。

【００１０】

【発明の目的】本発明は上記欠点に鑑みて案出されたものであり、その目的は、ＩＣ素子の電極を短時間で配線基板の配線導体に半田を介し確実かつ強固に接合させることを可能とした配線基板へのＩＣ素子の実装方法を提供することにある。

【００１１】

【問題点を解決するための手段】本発明の配線基板へのＩＣ素子の実装方法は、ＩＣ素子の電極に取着してある半田バンプ表面にフラックスを付着させ、次に前記ＩＣ素子を配線基板上に半田バンプが配線基板の配線導体に当接するようにして載置し、その後に前記ＩＣ素子の半田バンプと該半田バンプに付着させたフラックスとを同時に加熱し、配線導体表面にＩＣ素子の電極を半田を介し接合させることを特徴とする。

【００１２】

【実施例】以下、本発明の実装方法を発熱素子をＩＣ素子の駆動によって選択的にジュール発熱させ感熱紙等に所定の印字画像を形成するサーマルヘッドを例にとって説明する。

【００１３】図１は、本発明の実装方法を適用して製作したサーマルヘッドの一実施例を示し、１は配線基板、２は発熱素子、３は配線導体、４はＩＣ素子である。

【００１４】前記配線基板１はアルミナセラミックス等の電気絶縁材料から成り、上面に発熱素子２や駆動用ＩＣ素子４等を支持するとともに、サーマルヘッドの温度を感熱紙等に良好な印字画像を形成するのに必要な温度に制御する作用を為す。

【００１５】また前記配線基板１の上面には多数の発熱素子２が例えば１６ｄｏｔ／ｍｍで高密度に被着配列されており、更に各発熱素子２には一対の配線導体３が接

続されている。

【００１６】前記発熱素子２は例えば窒化タンタル等から成り、それ自体が所定の電気抵抗率を有しているため、一対の配線導体３を介して電力が印加されるとジュール発熱を起こし、印字画像を形成するに必要な温度、例えば２５０～４００℃の温度に発熱する。

【００１７】また前記発熱素子２に接続されている一対の配線導体３はアルミニウム等の金属から成り、該一対の配線導体３は発熱素子２にジュール発熱を起こさせるために必要な所定の電力を印加する作用を為す。

【００１８】尚、前記発熱素子２及び一対の配線導体３は従来周知のスパッタリング法及びフォトリソグラフィー技術を採用することによって配線基板１上に所定パターンに被着される。

【００１９】また前記配線導体３にはＩＣ素子４の電極５が半田バンプを介して接合されており、該ＩＣ素子４は発熱素子２を外部電気信号に対応させて選択的にジュール発熱させ、感熱紙等に所望する印字画像を形成させる作用を為す。

【００２０】かくして上述したサーマルヘッドは、ＩＣ素子４の駆動に伴って一対の配線導体３間に所定の電力を印加し、発熱素子２を外部電気信号に対応させて所定の温度にジュール発熱させるとともに該発熱した熱を感熱紙等に伝導させ、感熱紙等に印字画像を形成することによってサーマルヘッドとして機能する。

【００２１】次に、前記配線基板１上にＩＣ素子４を実装する方法について、図２（ａ）～（ｄ）を用いて説明する。

【００２２】（１）まず、図２（ａ）に示す如く、上面に発熱素子２及び配線導体３を被着させたアルミナセラミックス製の配線基板１と、電極５に半田バンプ５ａを取着させたＩＣ素子４とを準備する。

【００２３】（２）次に、ＩＣ素子４の半田バンプ５ａ表面にフラックス６を付着させる。

【００２４】前記フラックス６は、図２（ｂ）に示す如く、フラックス転写板７上に一定厚みのフラックス層６ａを形成し、該フラックス層６ａにＩＣ素子４の半田バンプ５を接触させることによってＩＣ素子４の半田バンプ５ａ表面に付着される。

【００２５】尚、前記フラックス６は、松脂にブチルアルコールやＩＰＡ等の有機溶剤を添加混合した高粘度を有する液体であり、後述する半田リフロー用の炉の中で所定温度に加熱されると配線導体３表面を還元し、配線導体３表面に形成されている酸化膜を除去する作用を為す。

【００２６】（３）次に、前記ＩＣ素子４を配線基板１上に、該ＩＣ素子４の半田バンプ５ａが配線基板１の配線導体３に当接されるようにして載置する。

【００２７】前記ＩＣ素子４は、ダイマウンタ等を用いることによって配線基板１上面の所定位置に載置され、

この時、フラックス６は図２（ｃ）に示す如く、半田バンプ５ａから各配線導体３の個別に転写される。

【００２８】（４）最後に、ＩＣ素子４を載置させた配線基板１を約２００乃至２３０℃の半田リフロー用の炉に入れ、ＩＣ素子４の半田バンプ５ａとフラックス６とを同時に加熱し、フラックス６で配線導体３表面を還元し酸化膜を除去するとともに、該配線導体３表面にＩＣ素子４の電極５を図２（ｄ）に示す如く、半田バンプ５ａを介して接合させ、これによってＩＣ素子４の配線基板１上への実装が完了する。

【００２９】この場合、フラックス６はＩＣ素子４の半田バンプ５ａから各配線導体３に個別に転写され、配線基板１上には少量のフラックス６が付着されているだけであるため、フラックス６とＩＣ素子４の電極５に取着された半田バンプ５ａとを半田リフロー用の炉で加熱し、ＩＣ素子４を配線基板１上に実装する際、フラックス６中に含まれる有機物質等が突沸を起こすことは殆ど無く、その結果、ＩＣ素子４の電極５と配線導体３との位置合わせを正確とし、ＩＣ素子４の電極５を所定の配線導体３に半田バンプ５ａを介して確実かつ強固に接合させることができるようになる。

【００３０】また前記配線基板１上に付着されるフラックス６はその量が少ないため、ＩＣ素子４を配線基板１上に実装する際、フラックス６中に含まれる有機物質等が短時間で蒸発し、ＩＣ素子４の配線基板１上への実装が極めて効率良く行える。

【００３１】尚、本発明は上記実施例に限定されるものでは無く、本発明の要旨を逸脱しない範囲であれば種々の変更は可能であり、例えば上述の実施例ではサーマルヘッドにおけるＩＣ素子の実装を説明したが、混成集積回路装置等の他の電子装置におけるＩＣ素子の実装にも適用可能である。

【００３２】また上記実施例においては、ＩＣ素子４の半田バンプ５ａ表面へのフラックス６の付着をフラックス転写板７を使用することによって行ったが、ＩＣ素子４の半田バンプ５ａ表面にフラックスをスクリーン印刷法により印刷塗布することによって付着させても良く、或いはメタルマスクを使用したフラックスの塗布方法、即ち、金属板にＩＣ素子４の半田バンプ５ａと対応する孔を複数個穿設したメタルマスクを準備し、次に前記メタルマスクの一主面側にＩＣ素子４を該ＩＣ素子４の半田バンプ５ａがメタルマスクの孔に嵌め込まれるようにして当接させ、その後、メタルマスクの他主面側からフラックスをＩＣ素子４の半田バンプ５ａに選択的に塗布させることによって付着させても良い。

【００３３】

【発明の効果】本発明の配線基板へのＩＣ素子の実装方法によれば、ＩＣ素子の電極に取着されている半田バンプにフラックスを付着させておくことから、ＩＣ素子を配線基板上に半田バンプが配線基板の配線導体に当接さ

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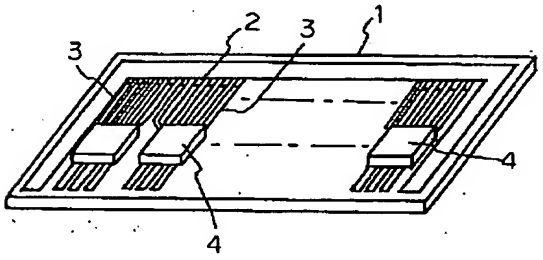
れるようにして載置し、しかる後、ＩＣ素子の半田バンプとフラックスとを同時に加熱し、フラックスで配線基板の配線導体表面を還元し酸化膜を除去するとともに、該配線導体表面にＩＣ素子の電極を半田を介し接合させる際、フラックス中に含まれる有機物質等が少量で、突沸を起こすことは殆ど無く、その結果、ＩＣ素子の電極と配線導体との位置合わせを正確とし、ＩＣ素子の電極を所定の配線導体に半田を介して確実、強固に接合させることができるようになる。

【００３４】また本発明の配線基板へのＩＣ素子の実装方法によれば、フラックスの量が少ないため、ＩＣ素子を配線基板上に実装する際、フラックス中に含まれる有機溶剤等が短時間で蒸発し、ＩＣ素子の配線基板への実装が極めて効率良く行える。

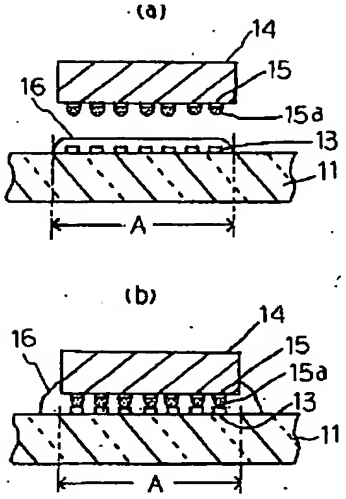
【００３５】

【図面の簡単な説明】

【図１】



【図３】



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【図１】本発明の方法によりＩＣ素子を実装したサーマルヘッドの一実施例を示す斜視図である。

【図２】（ａ）乃至（ｄ）は本発明の配線基板へのＩＣ素子の実装方法を説明するための各工程毎の断面図である。

【図３】（ａ）（ｂ）は従来の配線基板へのＩＣ素子の実装方法を説明するための各工程毎の断面図である。

【符号の説明】

１・・・配線基板
２・・・発熱素子
３・・・配線導体
４・・・ＩＣ素子
５・・・電極
５ａ・・半田バンプ
６・・・フラックス

【図２】